Space Weather Highlights **SWPC PRF 1996**
25 November - 01 December 2013 **02 December 2013**

Solar activity was at low levels throughout the period. The largest event was a C2 flare on 25 November at 1149 UTC; from Region 1904 (N12, L=039 class/area Dai/130 on 24 November). Regions 1908 (S26, L=236 class/area Dao/230 on 29 November) and 1909 (S18, L=205 class/area Dkc/350 on 01 December) were the most productive flare-producing regions of this period; each producing numerous C1 flares during their transit across the visible disk. A coronal mass ejection (CME) was observed in SOHO/LASCO C3 coronagraph imagery beginning on 27 November at 2306 UTC and was associated with a long-duration C1 flare from Region 1907 (S09, L=272 class/area Eac/200 on 28 November) that peaked on 28 November at 0041 UTC. The WSA-ENLIL model output and forecaster analysis indicated a possible glancing blow at Earth on 02 December. A weak shock signature was observed at the ACE spacecraft on 29 November at 1250 UTC, but no reflection of the shock was observed in the Earth-based magnetometer network.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal levels throughout this period.

Geomagnetic field activity was quiet on 25 - 28 November under a nominal solar wind environment. The geomagnetic field increased to quiet to unsettled levels on 29 November and 01 December, with quiet to active levels observed on 30 November due to onset of a positive polarity coronal hole high speed stream (CH HSS).

Space Weather Outlook
02 December - 28 December 2013

Solar activity is likely to be low with a slight chance for M-class flare activity (NOAA Scale R1-R2 / Minor-Moderate) throughout the outlook period.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be normal to moderate levels throughout the outlook period.

Geomagnetic field activity is expected to be at predominately quiet levels throughout the outlook period with the following exceptions: quiet to active conditions on 02 December and quiet to unsettled conditions on 03 December with passage of the 28 November coronal mass ejection (CME), quiet to unsettled conditions on 06 December and quiet to active conditions on 07 - 08 December with onset of a positive polarity coronal hole high speed stream (CH HSS), quiet to unsettled conditions on 13 - 14 December with onset of a negative polarity CH HSS, quiet to active conditions on 26 - 27 December and quiet to unsettled conditions on 28 December with onset of a positive polarity CH HSS.

Daily Solar Data

Date	Radio Flux 10.7cm	Sun spot No.	Sunspot Area (10^{-6} hemi.)	X-ray Background Flux	Flares							
					X-ray			Optical				
					C	M	X	S	1	2	3	4
25 November	119	52	200	B4.6	4	0	0	0	0	0	0	0
26 November	116	47	140	B4.5	1	0	0	0	0	0	0	0
27 November	129	76	370	B4.6	2	0	0	0	0	0	0	0
28 November	133	100	800	B5.0	4	0	0	5	0	0	0	0
29 November	129	95	770	B3.5	1	0	0	1	0	0	0	0
30 November	131	102	630	B3.5	1	0	0	0	0	0	0	0
01 December	131	104	650	B3.7	2	0	0	0	0	0	0	0

Daily Particle Data

Date	Proton Fluence (protons/cm ^{2} -day -sr)			Electron Fluence (electrons/cm^2 -day -sr)		
	>1 MeV	>10 MeV	>100 MeV	>0.6 MeV	>2MeV	>4 MeV
25 November	4.4e+04	1.1e+04	2.5e+03		9.0e+05	
26 November	5.0e+04	1.1e+04	2.4e+03		9.5e+05	
27 November	5.6e+04	1.0e+04	2.5e+03		9.4e+05	
28 November	7.9e+04	1.0e+04	2.5e+03		1.0e+06	
29 November	1.5e+05	1.1e+04	2.6e+03		1.1e+06	
30 November	1.5e+05	1.1e+04	2.5e+03		8.4e+05	
01 December	2.4e+05	1.1e+04	2.2e+03		9.8e+05	

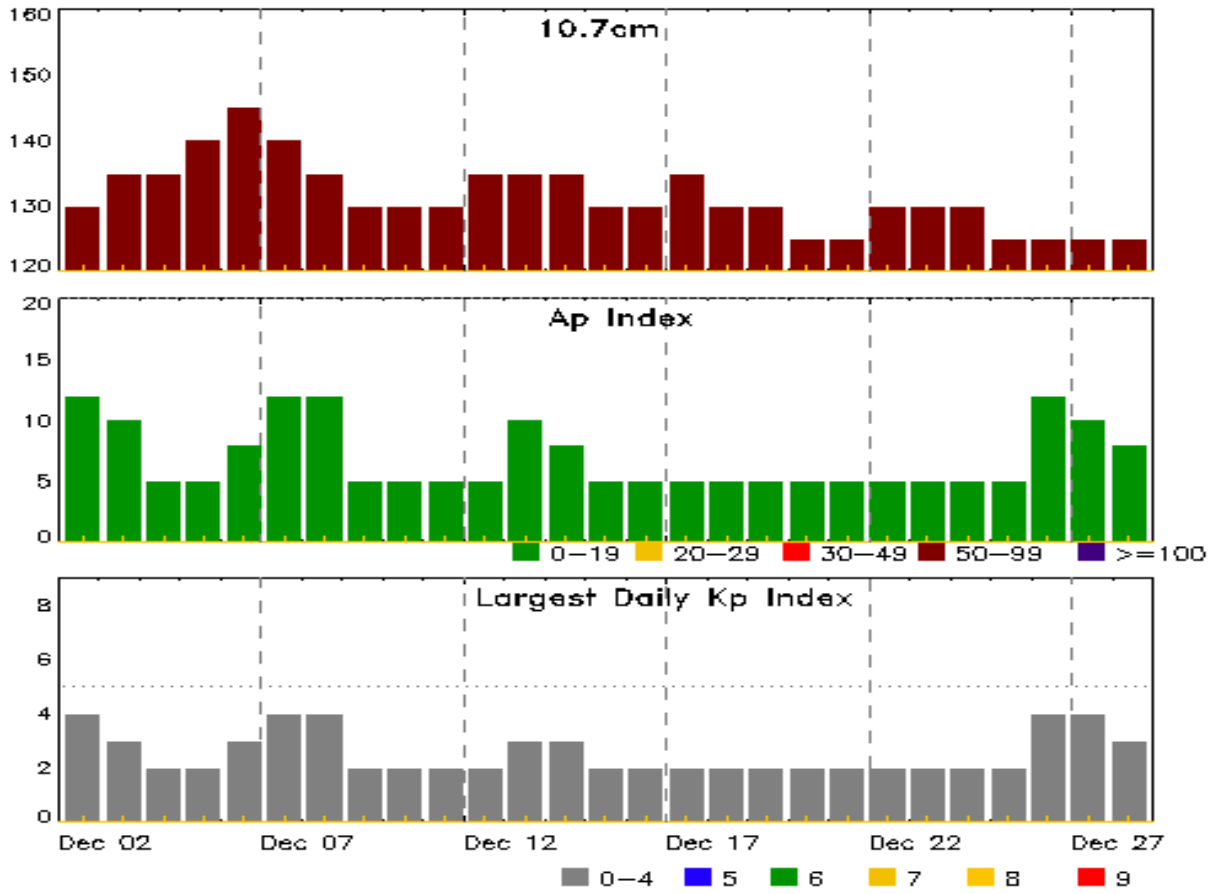
Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
25 November	2	0-1-0-0-1-1-1-0	0	0-0-0-0-0-0-0-0	2	0-1-0-0-0-0-1-0
26 November	2	0-0-0-0-1-1-1-1	0	0-0-0-0-0-0-0-0	2	0-0-0-0-0-1-1-1
27 November	2	1-1-0-0-2-1-1-0	0	0-0-0-0-0-0-0-0	2	1-1-0-0-1-1-1-0
28 November	1	0-0-0-0-1-1-0-0	0	0-0-0-0-0-0-0-0	2	0-0-0-0-0-1-0-1
29 November	6	1-2-2-2-2-2-2-1	10	0-0-2-5-1-2-2-2	8	1-3-2-2-2-2-3-2
30 November	7	0-1-2-2-2-2-2-3	13	0-0-1-5-4-3-1-2	9	1-1-2-2-2-2-2-4
01 December	7	2-2-3-1-3-1-1-1	6	2-2-3-3-2-0-0-0	10	3-3-3-2-3-1-1-1

Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
29 Nov 1257	WARNING: Geomagnetic Sudden Impulse expected	29/1350 - 1450
30 Nov 2243	WARNING: Geomagnetic K = 4	30/2242 - 01/1300
30 Nov 2308	ALERT: Geomagnetic K = 4	30/2306

Twenty-seven Day Outlook



Date	Radio Flux 10.7cm	Planetary A Index	Largest Kp Index	Date	Radio Flux 10.7cm	Planetary A Index	Largest Kp Index
02 Dec	130	12	4	16 Dec	130	5	2
03	135	10	3	17	135	5	2
04	135	5	2	18	130	5	2
05	140	5	2	19	130	5	2
06	145	8	3	20	125	5	2
07	140	12	4	21	125	5	2
08	135	12	4	22	130	5	2
09	130	5	2	23	130	5	2
10	130	5	2	24	130	5	2
11	130	5	2	25	125	5	2
12	135	5	2	26	125	12	4
13	135	10	3	27	125	10	4
14	135	8	3	28	125	8	3
15	130	5	2				

Energetic Events

	Time			X-ray		Optical Information			Peak Radio Flux		Sweep Freq Intensity	
Date	Begin	Max	Half Max	Class	Integ Flux	Imp/ Brtns	Location Lat CMD	Rgn #	245	2695	II	IV

No Events Observed

Flare List

	Time				Optical		
Date	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
25 Nov	0029	0034	0041	B7.8			1904
25 Nov	0259	0315	0323	B7.1			
25 Nov	1002	1149	1216	C2.0			1904
25 Nov	1447	1451	1454	B8.2			
25 Nov	1710	1729	1740	C1.0			
25 Nov	1841	1924	1944	C1.7			
25 Nov	2041	2120	2138	C1.1			
26 Nov	0121	0129	0140	C1.6			
26 Nov	2132	2137	2141	B8.4			
26 Nov	2304	2308	2311	B7.1			
27 Nov	1355	1539	1618	C1.4			
27 Nov	2355	0041	0123	C1.4			
28 Nov	0933	0937	0940	C1.0	SF	S11E07	1907
28 Nov	1158	1202	1206	B8.5			1908
28 Nov	1228	1232	1235	B9.0			1908
28 Nov	1559	1604	1612	C1.2	SF	S26E34	1908
28 Nov	1657	1707	1712	C1.2	SF	S24E35	1908
28 Nov	1705	1707	1711		SF	S24E35	1908
28 Nov	1942	1950	1954	C1.0	SF	S25E34	1908
29 Nov	0626	0642	0650	B7.3			1908
29 Nov	0959	1006	1009	C1.5	SF	S05W16	1907
30 Nov	1116	1121	1126	B6.7			1909
30 Nov	1423	1429	1440	B8.6			1909
30 Nov	1454	1459	1512	B8.7			1909
30 Nov	2122	2127	2134	B7.0			
30 Nov	2154	2158	2200	C1.0			1909
01 Dec	1117	1121	1125	C1.4			
01 Dec	2153	2202	2209	C1.3			

Region Summary

	Location		Sunspot Characteristics					Flares							
		Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
Date	Lat CMD	Lon	10^{-6} hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
			Region 1899												
12 Nov	N06E76	37	250	7	Hhx	1	A	1							
13 Nov	N06E62	39	360	4	Hkx	3	A	2			1				
14 Nov	N07E50	37	630	8	Dki	10	B	5			1				
15 Nov	N06E35	39	600	9	Dko	14	BG		1		5				
16 Nov	N06E23	39	510	8	Dko	11	BG								
17 Nov	N06E10	39	510	8	Cko	18	BG	1			1				
18 Nov	N04W04	39	610	7	Hkx	6	A								
19 Nov	N05W16	38	610	9	Cko	8	B								
20 Nov	N07W29	38	560	9	Dko	7	B								
21 Nov	N07W45	40	600	8	Dko	16	B								
22 Nov	N07W56	38	560	10	Dko	8	B				2				
23 Nov	N07W71	41	480	5	Hhx	2	A	2			1	1			
24 Nov	N07W84	41	560	4	Hhx	4	A								
								11	1	0	11	1	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 39

			Region 1903												
17 Nov	S12E77	332	60	2	Hsx	1	A								
18 Nov	S11E63	332	140	2	Hsx	2	A								
19 Nov	S10E48	334	130	3	Hax	2	A								
20 Nov	S12E36	333	150	2	Hax	3	A								
21 Nov	S12E23	332	130	5	Cso	6	B								
22 Nov	S14E08	334	100	2	Hsx	1	A								
23 Nov	S12W05	335	130	2	Cao	3	B								
24 Nov	S12W19	336	110	2	Hax	2	A								
25 Nov	S12W32	336	90	2	Hax	2	A								
26 Nov	S12W42	333	100	3	Cso	5	B								
27 Nov	S12W58	335	100	3	Cso	2	B								
28 Nov	S12W70	334	110	2	Hax	2	A								
29 Nov	S11W83	334	80	2	Hsx	1	A								
30 Nov	S11W94	332	30	1	Hsx	1	A								
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 335

Region Summary - continued

	Location		Sunspot Characteristics					Flares							
		Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
Date	Lat CMD	Lon	10^{-6} hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
			Region 1904												
23 Nov	N12W67	37	80	8	Dai	17	BG	4	2		1	1			
24 Nov	N12W82	39	130	10	Dai	12	BG	10			2				
25 Nov	N12W95	39	60	2	Hax	2	A	1							
								15	2	0	3	1	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 37

			Region 1905												
21 Nov	N19E0*	258	plage					1							
22 Nov	N19E85	258	plage					5							
23 Nov	N19E71	258	60	9	Dso	3	BG	3							
24 Nov	N18E57	260	80	9	Dao	11	BG								
25 Nov	N18E45	259	50	6	Cso	7	B								
26 Nov	N19E32	259	10	6	Bxo	4	B								
27 Nov	N18E21	256	10	2	Bxo	5	B								
28 Nov	N18E07	257	plage												
29 Nov	N18W07	258	plage												
30 Nov	N18W21	259	plage												
01 Dec	N18W35	260	plage												
								9	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 257

			Region 1906												
25 Nov	S17E42	262	0	1	Axx	1	A								
26 Nov	S17E28	263	plage												
27 Nov	S17E14	263	plage												
28 Nov	S17W00	264	plage												
29 Nov	S17W14	265	plage												
30 Nov	S17W28	266	plage												
01 Dec	S17W42	267	plage												
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 264

Region Summary - continued

	Location		Sunspot Characteristics					Flares							
		Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
Date	Lat CMD	Lon	10^{-6} hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
			Region 1907												
26 Nov	S09E18	273	30	8	Dro	8	B								
27 Nov	S10E04	272	60	6	Dao	11	B								
28 Nov	S09W08	272	200	13	Eac	25	BG	1			1				
29 Nov	S09W22	273	130	12	Eac	21	BG	1							
30 Nov	S09W38	276	60	7	Cao	10	B								
01 Dec	S09W49	274	30	2	Hrx	3	A								
								2	0	0	1	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 272

			Region 1908												
27 Nov	S25E43	233	60	6	Dao	6	B								
28 Nov	S26E28	236	160	8	Dao	10	B	3			4				
29 Nov	S26E15	236	230	9	Dao	8	BG								
30 Nov	S26E01	237	180	10	Dao	6	BG								
01 Dec	S26W10	235	180	11	Eao	12	BG								
								3	0	0	4	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 237

			Region 1909												
27 Nov	S18E69	208	140	5	Dso	2	B								
28 Nov	S18E59	205	300	9	Dkc	9	B								
29 Nov	S18E45	206	320	9	Dkc	14	B								
30 Nov	S18E31	207	330	10	Dkc	17	BG	1							
01 Dec	S18E20	205	350	10	Dkc	23	BG								
								1	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 205

			Region 1910												
28 Nov	N04W10	273	30	3	Cro	4	B								
29 Nov	N01W27	278	10	1	Axx	1	A								
30 Nov	N01W41	279	10	3	Bxo	4	B								
01 Dec	N02W54	279	40	6	Dao	8	B								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 273

Region Summary - continued

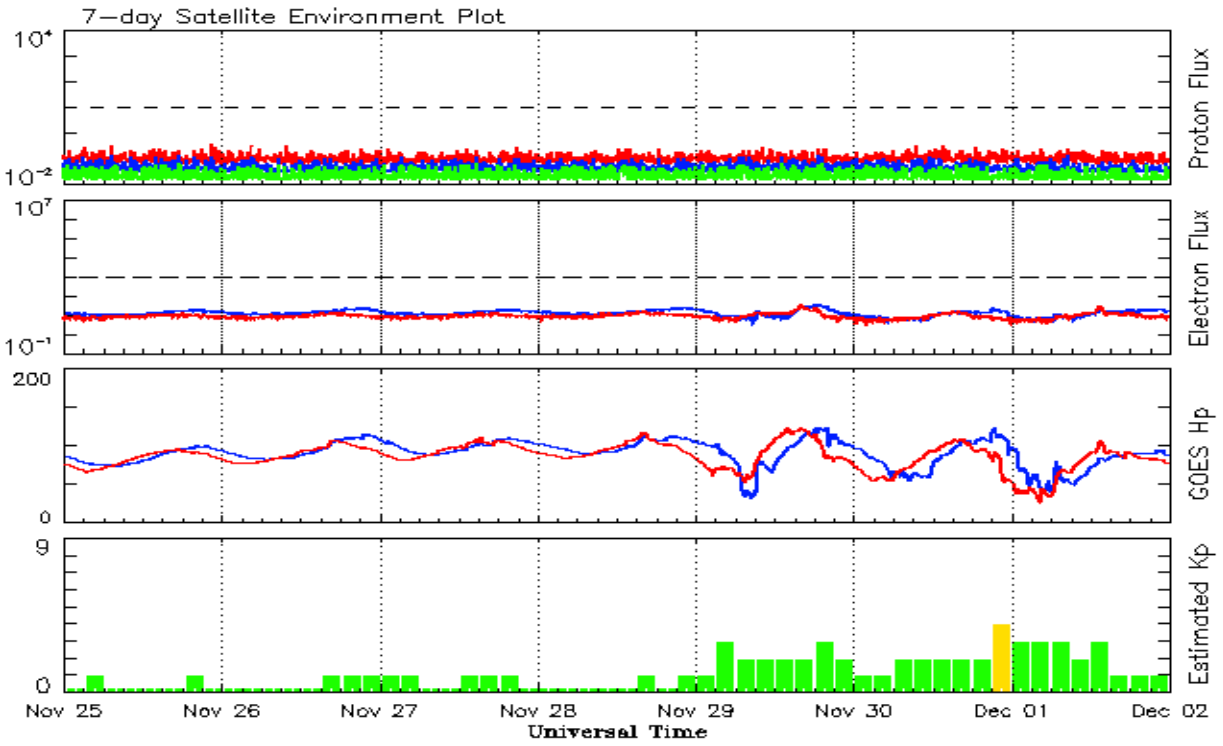
	Location		Sunspot Characteristics					Flares							
		Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
Date	Lat CMD	Lon	10^{-6} hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
		Region 1911													
30 Nov	S12E16	222	20	3	Cso	4	B								
01 Dec	S12E01	224	50	5	Dao	8	B								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 224

Recent Solar Indices (preliminary)
Observed monthly mean values

	Sunspot Numbers					Radio Flux		Geomagnetic	
	Observed values		Ratio	Smooth values		Penticton	Smooth	Planetary	Smooth
Month	SEC	RI	RI/SEC	SEC	RI	10.7 cm	Value	Ap	Value
				2011					
December	106.3	73.0	0.69	89.2	63.4	141.2	121.6	3	8.0
				2012					
January	91.3	58.3	0.64	92.0	65.5	133.1	124.4	6	8.3
February	50.1	32.9	0.66	94.2	66.9	106.7	126.7	7	8.4
March	77.9	64.3	0.82	94.1	66.8	115.1	126.8	14	8.1
April	84.4	55.2	0.65	91.3	64.6	113.1	125.8	9	8.0
May	99.5	69.0	0.69	87.7	61.7	121.5	123.8	8	8.2
June	88.6	64.5	0.73	83.9	58.9	120.5	121.1	10	8.3
July	99.6	66.5	0.67	82.4	57.8	135.6	119.5	13	8.3
August	85.8	63.0	0.74	83.1	58.2	115.7	119.2	7	8.1
September	84.0	61.4	0.73	83.7	58.1	123.2	118.9	8	7.8
October	73.5	53.3	0.73	85.0	58.6	123.3	119.2	9	7.4
November	89.2	61.8	0.69	87.3	59.7	120.9	120.1	6	7.3
December	60.4	40.8	0.68	88.0	59.6	108.4	120.1	3	7.5
				2013					
January	99.8	62.9	0.63	87.1	58.7	127.1	118.9	4	7.5
February	60.0	38.1	0.63	86.7	58.4	104.4	118.0	5	7.4
March	81.0	57.9	0.71	85.7	57.5	111.2	117.1	9	7.4
April	112.8	72.4	0.64	86.7	57.9	125.0	116.6	5	7.2
May	125.5	78.7	0.63	90.5	59.9	131.3	118.1	10	7.0
June	80.1	52.5	0.66			110.2		13	
July	86.1	57.0	0.66			115.6		9	
August	90.2	66.0	0.73			114.7		9	
September	55.0	36.9	0.67			102.7		5	
October	127.1	85.6	0.67			132.3		7	
November	125.7	77.6	0.62			148.4		5	

Note: Values are final except for the most recent 6 months which are considered preliminary. Cycle 24 started in Dec 2008 with an RI=1.7.



Weekly Geosynchronous Satellite Environment Summary
Week Beginning 25 November 2013

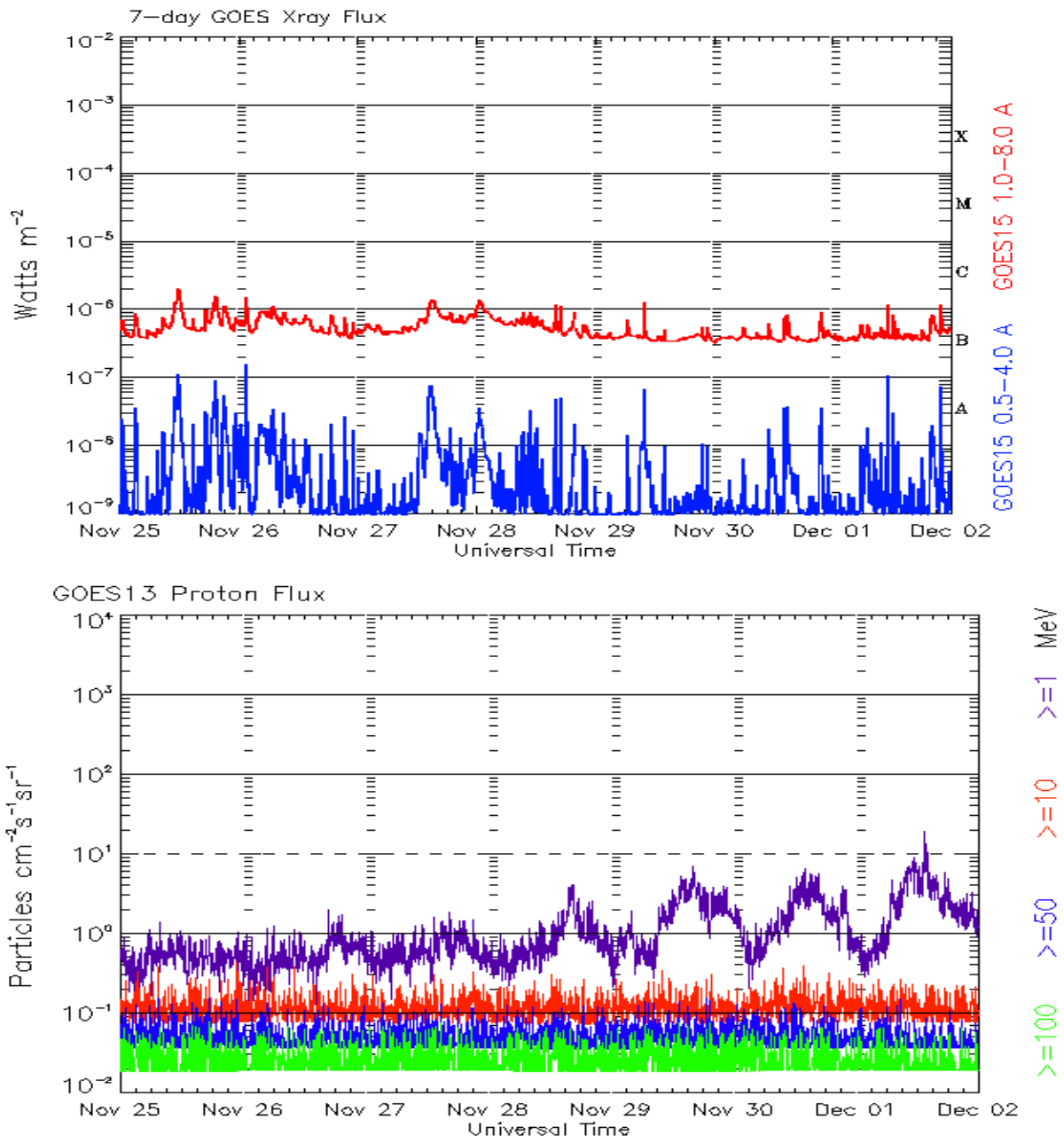
The proton flux plot contains the five-minute averaged integral proton flux (protons/cm^2-sec -sr) as measured by the SWPC Primary GOES satellite, near West 75, for each of three energy thresholds: greater than 10, 50, and 100 MeV.

The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm^2-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

The Hp plot contains the five minute averaged Hp magnetic field component in nanoteslas (nT) as by the SWPC Primary GOES satellite. The Hp component is parallel to the spin axis of the satellite, which is nearly parallel to the Earth's rotation axis.

The Estimated 3-hour Planetary Kp-index is derived at the NOAA Space Weather Prediction Center using data from the following ground-based magnetometers: Boulder, Colorado; Chambon la Foret, France; Fredericksburg, Virginia; Fresno, California; Hartland, UK; Newport, Washington; Sitka, Alaska. These data are made available thanks to the cooperative efforts between SWPC and data providers around the world, which currently includes the U.S. Geological Survey, the British Geological Survey, and the Institut de Physique du Globe de Paris.

The data included here are those now available in real time at the SWPC and are incomplete in that they do not include the full set of parameters and energy ranges known to cause satellite operating anomalies. The proton and electron fluxes and Kp are 'global' parameters that are applicable to a first order approximation over large areas. H parallel is subject to more localized phenomena and the measurements generally are applicable to within a few degrees of longitude of the measuring satellite.



Weekly GOES Satellite X-ray and Proton Plots
Week Beginning 25 November 2013

The x-ray plots contains five-minute averages x-ray flux (Watt/m^2) as measure by the SWPC primary GOES X-ray satellite, usually at West 105 longitude, in two wavelength bands, 0.05 - 0.4 and 0.1 - 0.8 nm. The letters A, B, C, M and X refer to x-ray event levels for the 0.1 - 0.8 nm band.

The proton plot contains the five-minute averaged intergral flux units (pfu = protons/cm^2 -sec -sr) as measured by the primary SWPC GOES Proton satellite for each of the energy thresholds: >1, >10, >30, and >100 MeV. The P10 event threshold is 10 pfu at greater than 10 MeV.

Preliminary Report and Forecast of Solar Geophysical Data (The Weekly)

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Notice: The 27-day Outlook, Satellite Environment, X-ray and Proton plots have been redesigned. Comments and suggestions are welcome SWPC.Webmaster@noaa.gov

The Weekly has been published continuously since 1951 and is available online since 1997.

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